

ATTENTION: EXAMINER BRIAN GORDON

FOR DISCUSSION PURPOSES ONLY

US APP. NO. 10 643,424

3. (Currently Amended) A device for conducting processing steps on a
substrate comprising an array of chemical compounds on a surface thereof, said device
comprising:

a housing comprising a housing chamber configured to retain fluid forming a
meniscus at an interface of said fluid with an atmosphere,

an opening in said housing adapted for insertion into said housing chamber of
the substrate, and

A device according to claim 1 wherein said fluid separation mechanism is a lifting
mechanism adapted to lift for lifting said substrate out of contact with said fluid in a
controlled manner while preserving the integrity of the fluid's meniscus at said interface
during separation of said fluid from contact with said substrate by lifting said substrate
out of said housing chamber at a rate that substantially eliminates droplet formation of
said fluid on said substrate. [NOTE DEFN OF ADAPTED TO ON PAGE: 16]

5. (Currently Amended) A device for conducting processing steps on a
substrate comprising an array of chemical compounds on a surface thereof, said device
comprising:

a housing comprising a housing chamber configured to retain fluid forming a meniscus at an interface of said fluid with an atmosphere.

an opening in said housing adapted for insertion into said housing chamber of the substrate, and

~~A device according to claim 1 wherein said fluid separation mechanism is a fluid removal mechanism~~ configured to remove ~~for removing~~ fluid from said housing chamber ~~in said controlled manner while preserving the integrity of the fluid's meniscus at said interface during separation of said fluid from contact with said substrate by removing fluid from said housing chamber at a rate that substantially eliminates droplet formation of said fluid on said substrate.~~

1. (Currently Amended) A device for conducting processing steps on a substrate comprising an array of chemical compounds on a surface thereof, said device comprising:

(a) a housing comprising a housing chamber configured to retain any fluid introduced into said housing chamber, said fluid having a meniscus at an interface of said fluid with an atmosphere,

(b) an opening in said housing adapted for insertion into said housing chamber of a substrate having a surface comprising an array of chemical compounds, and

(c) a fluid separation mechanism configured to separate fluid in said housing chamber from contact with said substrate ~~in a controlled manner~~ at a rate that preserves the integrity of the fluid's meniscus at said ~~the atmosphere fluid interface, said rate~~

being a function of a surface tension characteristics of said fluid and a hydrophobicity or hydrophilicity characteristic of said surface of said substrate.

~~— (d) — at least one inlet in fluid communication with said housing chamber, and~~

~~— (e) — at least one outlet in fluid communication with said housing chamber.~~

A device for conducting processing steps, said device comprising:

a substrate comprising an array of chemical compounds on a surface thereof,

a housing comprising a housing chamber configured to retain fluid,

a fluid retained in said housing chamber and having a meniscus at an interface of said fluid with an atmosphere,

an opening in said housing adapted for insertion into said housing chamber of said,

(c) a fluid separation mechanism configured to separate fluid in said housing chamber from contact with said substrate ~~in a controlled manner at a rate that preserves~~ the integrity of the fluid's meniscus at said the atmosphere-fluid interface, said rate being a function of a surface tension characteristics of said fluid and a hydrophobicity or hydrophilicity characteristic of said surface of said substrate.

~~— (d) — at least one inlet in fluid communication with said housing chamber, and~~

~~— (e) — at least one outlet in fluid communication with said housing chamber.~~

29. (Currently Amended) A method for performing a step of a hybridization reaction on the surface of a substrate, said method comprising:

(a) inserting a substrate comprising an array of chemical compounds on a

surface thereof into a housing chamber of a device according to claim 1,

(b) introducing a fluid reagent for performing said step into said housing chamber, and

(c) removing said fluid reagent from contact with said substrate in a controlled manner at a rate that substantially eliminates formation of droplets of said fluid on said surface of said substrate.

A method for performing a step of a hybridization reaction on the surface of a substrate, said method comprising:

inserting a substrate comprising an array of chemical compounds on a surface thereof into a housing chamber of a flow device,

introducing a fluid reagent for performing said step into said housing chamber, and

removing said fluid reagent from contact with said substrate while preserving the integrity of a meniscus of the fluid reagent during separation of said fluid reagent from contact with said substrate, to substantially eliminate formation of droplets of said fluid reagent on said surface of said substrate.

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